UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,422	05/24/2006	Anne-Marie Caminade	1004900-000276	1713

21839 7590 01/08/2009

BUCHANAN, INGERSOLL & ROONEY PC
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
DOLLINGER, MICHAEL M	
ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
01/08/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No.	Applicant(s)	
	10/580,422	CAMINADE ET AL.	
	Examiner	Art Unit	
	MICHAEL DOLLINGER	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *60-79, 81-87 and 89-118* is/are pending in the application.

4a) Of the above claim(s) *92-118* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *60-64,67-76,78,79,81-87 and 89* is/are rejected.

7)☒ Claim(s) *65, 66, 77, 90 and 91* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The 35 USC § 112 rejections in the Office Action filed on 09 July 2008 have been obviated by the amendments to the claims.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 82-87 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 82-87 depend from claim 80 which is now cancelled. For purposes of examination, Examiner assumes that claims 82-87 are meant to depend from claim 60 since the subject matter of claim 80 has been incorporated into claim 60.

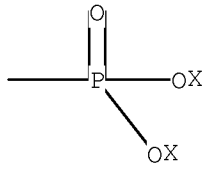
Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 60-64, 67-76, 78, 79, 81-84 and 89 are rejected under 35 U.S.C. 102(b) as being anticipated by Caminade et al (WO 0053009, herein US 6,939,831 B1 is used as an English language equivalent).

7. Regarding claim 60, applicants claim a dendritic polymer of generation 0 to 12 with a central core molecule of valence 3 to 8, optionally generation chains branching around the core, intermediate chains, and terminal groups at the end of each intermediate chains of the formula:



wherein each of the radicals X, which are identical or different, represent a radical -Me, -H and/or $-M^+$, wherein M^+ is a cation. The intermediate chains which are identical or different, are represented by the formula:

-J-K-L-

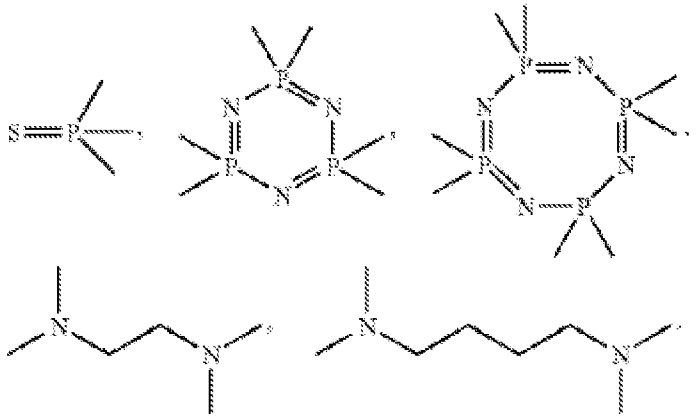
wherein J represents an oxygen atom, a sulfur atom or a radical -NR-; K represents a radical -Aryl-, -Heteroaryl-, or -Alkyl- and most limited to an unsubstituted phenyl; L represents a hydrocarbon chain having from 1 to 6 chain members optionally having one or more heteroatoms, or by the formula:

-L"-

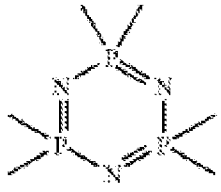
wherein L" represents an -alkyl- chain having from 1 to 6 chain members , optionally substituted by one or more substituents selected from -OH, -NRR', and -Oalkyl-. Caminade et al. disclose a dendritic polymer of one or more generations with core

molecule of valence preferable between 3 and 10 (column 14 lines 43-48) wherein the core may be a hexachlorocyclotriphosphazene or trichlorothiophosphane (column 15 lines 1-4), generation and intermediate chains, and with phosphonic type terminal groups (column 13 lines 1-3). Caminade et al. disclose the structure in FIG. (XI) (column 38) having the same formula -J-K-L- above wherein J is an oxygen atom; K is a radical aryl namely a phenylene group; and L is a four membered hydrocarbon chain with N and P heteroatoms.

8. Regarding claims 61-63, applicants claim a dendritic polymer wherein the central core contains at least one phosphorous atom or is selected from the following groups:

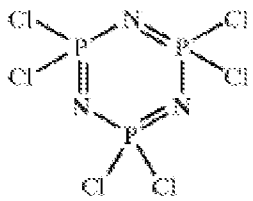


preferably of the formula:

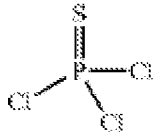


Caminade et al. disclose the central core of the dendritic polymer as hexachlorocyclotriphosphazene or trichlorothiophosphane (column 15 lines 1-4; Structures (VI) and (VII)):

(VI)



(VII)



.

9. Regarding claim 64, applicants claim a dendritic polymer having a DAB-AM, PAMAM, or PMMH structure. The structure in FIG. (XI), discussed above, reads on a PMMH structure, phenoxy methyl(methylhydrazono).

10. Regarding claim 67, applicants claim the dendritic polymer with 0 to 3 generations. Caminade et al. discloses intermediate products of dendrimers with 0 to 3 generations (column 5 lines 35-65).

11. Regarding claim 68, applicants claim the central core molecule of the dendritic polymer with a valence of 3, 4, or 6. Caminade et al. disclose the central core of the dendritic polymer as hexachlorocyclotriphosphazene which has a valence of 6 and trichlorothiophosphane which has a valence of 3.

12. Regarding claims 69-76, applicants claim generation branch compositions elected from linear or branched hydrocarbon chains having from 1 to 12 chain members wherein the generation chains are of the formula:

-A-B-C(D)=N-N(E)-(P(=G))<

wherein in the most limited embodiments A represents an oxygen atom; B represents a substituted or unsubstituted phenyl ring; D represents a hydrogen atom; E represents a radical alkyl; and G represents a sulfur atom. Caminade et al. disclose the structure in FIG. (XI) (column 38) having the same formula as represented above wherein A is an oxygen atom; B is an aryl group namely phenylene; C is a carbon atom; D is an hydrogen atom; E is an alkyl radical namely methyl; and G is a sulfur atom.

13. Regarding claim 78, applicants claim the generation chains represented by the formula:

-A"-N<

wherein A" represents a radical -Alkyl, -Alkenyl, or –Alkynyl. Caminade et al. disclose generation chains composed of alkylamino groups (column 16 line 6).

14. Regarding claim 79, applicants claim the generation chains as identical. Caminade et al. disclose generation chains with chemical motifs that are in part identical to each other (column 15 lines 33-37) and the structure of FIG. (XI) discloses identical generation chains.

15. Regarding claim 81, applicants claim the intermediate and generation chains wherein J and K are equal to A and B. The same elements of Figure (XI) of Caminade et al. anticipate both J and K, and A and B.

16. Regarding claims 82-84, applicants claim the intermediate chains, which are identical or different, as represented by the formula:

-J-K-L-

wherein J represents an oxygen atom, a sulfur atom or a radical -NR-; K represents a radical -Aryl-, -Heteroaryl-, or -Alkyl- and most limited to an unsubstituted phenyl; L represents a hydrocarbon chain having from 1 to 6 chain members optionally having one or more heteroatoms. Caminade et al. disclose the structure in FIG. (XI) (column 38) having the same formula as represented above wherein J is an oxygen atom; K is a radical aryl namely a phenylene group; and L is a four membered hydrocarbon chain with N and P heteroatoms.

17. Regarding claim 89, applicants claim a dendritic polymer with a core, generation and intermediate chains, and phosphonic terminals in the formula:

$$\S\text{-}\{\{A\text{-}B\text{-}C(D)=N\text{--}N(E)\text{-}(P(=G))<\}^{n}\text{-}[J\text{-}K\text{-}L\text{-}PO_3X_2]_2\}_m$$

wherein all variables are as defined above. Caminade et al. disclose dendritic polymers with a core of hexachlorocyclotriphosphazene or trichlorothiophosphane (column 15 lines 1-4), generation or intermediate chains described in paragraphs 5 and 12 of this office action, and phosphonic terminals (column 13 lines 1-3).

International Search Report

18. US 4,783,500 A, cited as an X category reference on the International Search report for PCT/FR2004/002989, was not used in a 35 USC § 102 rejection because it does not address the intermediate chains of claim 60.

19. DD 144 264 A, JP 05 178710 A and KR 9 602 224 B, cited as an X category references on the International Search report for PCT/FR2004/002989, were not used in a 35 USC § 102 rejection because they are directed toward non-elected claims.

Allowable Subject Matter

20. Claims 65, 66, 77, 90 and 91 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

21. Regarding claims 65 and 66, applicants claim a dendritic polymer wherein M^+ is an element of group IA, IIA, IIB, or IIIA or further claim M^+ is a sodium or potassium atom. In the Office action filed 09 July 2008, Examiner had rejected these claims because Caminade et al. disclose the phosphonic terminated polymer dissolved in a solvent (column19 lines 29-32) and in combination with an alkaline-earth metal salt (column 7 lines 31-34) or various sodium and potassium salts including Metam-sodium (column 8 line 45) and potassium hydroxyquinoline sulfate (column 8 lines 55-56). Examiner stated that the combination of solvent and alkaline-earth, sodium, and potassium salts will effectively create some dendritic polymer with group IIA, sodium, and potassium as the M^+ ions. This rejection is inappropriate because the combination would not result in dendritic polymers with group IIA, sodium, and potassium as the M^+ ions. Caminade et al represents the closest prior art, with the disclosure of dendritic polymers with the claimed intermediate chains and the phosphonic acid terminals. Caminade et al do not disclose any suggestion or motivation to prepare a dendritic polymer with terminals of cationic salts of phosphonic acid.

22. Regarding claim 77, Regarding claim 77, applicants claim the generation chains represented by the formula:

-A'-(C=O)-N(R)-B'-N<

wherein A' and B' each independently of the other represents a radical -Alkyl, -Alkenyl, or –Alkynyl group. In the Office action filed 09 July 2008, Examiner had rejected these claims because Caminade et al. disclose generation chains composed of acylaminoalkyl groups (column 16 line 8) substituted with amino (column 16 line 28) and alkyl groups (column 16 line 21). This rejection is inappropriate because the formula above is not described by an acylaminoalkyl group substituted with amino and alkyl groups. Caminade et al represent the closest prior art and do not disclose any suggestion or motivation to prepare a dendrimer with the claimed generation chains, intermediate chains and phosphonic terminal groups.

23. Regarding claim 90, Regarding claim 90, applicants claim a dendritic polymer with a core, generation and intermediate chains, and phosphonic terminals in the formula:

$$\S\text{-}\{\{A'\text{-}(C{=}O)\text{-}N(R)\text{-}B'\text{-}N{<}\}^{n}\text{-}[J\text{-}K\text{-}L\text{-}PO_3X_2]_2\}_m$$

wherein all variables are as defined above. In the Office action filed 09 July 2008, Examiner had rejected these claims because Caminade et al. disclose dendritic polymers with a core of hexachlorocyclotriphosphazene or trichlorothiophosphane (column 15 lines 1-4), generation or intermediate chains generation chains composed of acylaminoalkyl groups (column 16 line 8) substituted with amino (column 16 line 28) and alkyl groups (column 16 line 21), and phosphonic terminals (column 13 lines 1-3) and phosphonium terminals (column 13 line 8). This rejection is inappropriate because the formula above is not described by an acylaminoalkyl group substituted with amino and alkyl groups. Caminade et al represent the closest prior art and do not disclose any

suggestion or motivation to prepare a dendrimer with the claimed generation chains, intermediate chains and phosphonic terminal groups.

24. Regarding claim 91, applicants claim a dendritic polymer with a core, generation and intermediate chains, and phosphonic terminals in the formula:

$$\S\text{-}\{\{A''\text{-}NH\text{-}\}^{n}\text{-}[J\text{-}K\text{-}L\text{-}PO_3X_2]_2\}_m$$

wherein all variables are as defined above. In the Office action filed 09 July 2008, Examiner had rejected these claims because Caminade et al. disclose dendritic polymers with a core of hexachlorocyclotriphosphazene or trichlorothiophosphane (column 15 lines 1-4), generation chains composed of alkylamino groups (column 16 line 6), and phosphonic terminals (column 13 lines 1-3) and phosphonium terminals (column 13 line 8). This rejection is inappropriate because Caminade et al do not disclose dendrimers with a combination of alkylamino generation chains and intermediate chains corresponding to the formula -J-K-L-. Caminade et al represents the closest prior art and do not disclose or suggest this combination of generation and intermediate chains with phosphonic terminals.

25. Claims 85-87 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

26. In claims 85-87, applicants claim intermediate chains wherein L represents a radical –Alkyl-, -alkenyl- or -Alkynyl- group. In the Office action filed 09 July 2008, Examiner had rejected these claims because Caminade et al. disclose the intermediate

chains composed of aminoalkyl groups (column 16 line 6). Caminade et al. also disclose the structure in FIG. (XI) (column 38) wherein L is a substituted methylene group. This rejection is inappropriate because intermediate chains of aminoalkyl do not describe the claimed intermediate chains and in the structure in FIG. (XI) L is not a substituted methylene group or any other –Alkyl-, -alkenyl- or -Alkynyl- group. Caminade et al represent the closest prior art and do not disclose or suggest intermediate chains with the structure -J-K-L- wherein L is an –Alkyl-, -alkenyl- or -Alkynyl- group.

Response to Arguments

27. Applicant's arguments filed 06 November 2008 with respect to the 35 USC 102(b) rejection over Caminade et al have been fully considered but they are not persuasive. Applicant argues that 1) Caminade et al discloses gellable polymers useful for agricultural purposes whereas the present claims are directed to monophosphonic terminals which cannot gel and are useful for surface treating agents and 2) Caminade et al does not disclose the methyl esters of the phosphonic terminals. This is not found persuasive because 1) the present claims are not directed to non-gellable polymers not to any intended use and 2) the present claims are directed toward terminals of phosphonic acid, methyl esters of phosphonic acid, and cationic salts of phosphonic acid.

28. Applicant's arguments, see pages 18-20, filed 06 November 2008, with respect to claims 60-62, 64-66, 68, 69 and 79 have been fully considered and are persuasive. The rejection of 09 July 2008 with respect to Matthews et al has been withdrawn.

29. Applicant's arguments, see pages 20-23, filed 06 November 2008, with respect to claims 60-62, 67-76, 79, 80, 82, 83, 85, 86 and 89 have been fully considered and are persuasive. The rejection of 09 July 2008 with respect to Prévôté et al has been withdrawn.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL DOLLINGER whose telephone number is (571)270-5464. The examiner can normally be reached on Monday - Thursday 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Randy Gulakowski/
Supervisory Patent Examiner, Art Unit 1796

MICHAEL DOLLINGER
Examiner
Art Unit 1796

/mmd/